

CLAIMS

1. A master alloy for casting a copper alloy, comprising:
Cu: 40 to 80%, Zr: 0.5 to 35% and the balance of Zn.
- 5 2. A master alloy for casting a copper alloy, comprising:
Cu: 40 to 80%, Zr: 0.5 to 35%, P: 0.01 to 3% and the
balance of Zn.
- 10 3. The master alloy for casting a copper alloy according to
claim 1 or 2, further comprising:
one element selected from the group consisting of Mg:
0.01 to 1%, Al: 0.01 to 5%, Sn: 0.1 to 5%, B: 0.01 to 0.5%,
Mn: 0.01 to 5% and Si: 0.01 to 1%.
- 15 4. The master alloy for casting a copper alloy according to
claim 1 or 2,
wherein said Cu occupies 50 to 65%, and said Zr occupies
1 to 10%.
- 20 5. The master alloy for casting a copper alloy according to
claim 1 or 2,
wherein said master alloy is an ingot formed in the
shape of a boat, continuous casting material formed in the
shape of a rod or wire, or hot extrusion material formed in
25 the shape of a rod or wire.

6. A method of casting a modified copper alloy from a molten copper alloy containing Zr and P, which comprises:

providing a molten copper alloy;

adding at least Zr in the form of Cu-Zn-Zr alloy or Cu-Zn-Zr-P alloy into said molten copper alloy;

and casting said molten copper alloy.

7. The method of casting a modified copper alloy from a molten copper alloy containing Zr and P according to claim 6,

wherein a concentration of metal Zr in the molten alloy is in a range of 5 ppm or more, preferably 20 to 500 ppm in a presence of P when the molten copper alloy begins to solidify.

8. The method of casting a modified copper alloy from a

molten copper alloy containing Zr and P according to claim 7,

wherein an amount ratio of P to Zr in said molten copper alloy satisfies $0.5 < P/Zr < 150$, preferably $1 < P/Zr < 50$, and more preferably $1.2 < P/Zr < 25$.

9. The method of casting a modified copper alloy from a

molten copper alloy containing Zr and P according to claim 7,

wherein primary alpha phases begin to be crystallized during solidification.

10. The method of casting a modified copper alloy from a

molten copper alloy containing Zr and P according to claim 9,
wherein beta phases are crystallized by peritectic or
eutectic reactions.

5 11. The method of casting a modified copper alloy from a
molten copper alloy containing Zr and P according to claim 9,
wherein kappa, gamma, delta and/or mu phases are
precipitated in an alpha phase matrix by a solid phase
reaction.

10 12. The method of casting a modified copper alloy from a
molten copper alloy containing Zr and P according to claim 6,
wherein a copper alloy to be modified is one selected
from the group consisting of Cu - Zn, Cu - Zn - Si, Cu - Zn -
15 Sn, Cu - Zn - Al, Cu - Zn - Bi, Cu - Zn - Pb, Cu - Zn - Si -
Mn, Cu - Zn - Si - Pb, Cu - Zn - Si - Sn, Cu - Zn - Si - Al,
Cu - Zn - Sn - Pb, Cu - Zn - Sn - Bi, Cu - Zn - Sn - Al, Cu -
Sn, Cu - Sn - Pb, Cu - Sn - Bi, Cu - Al, Cu - Al - Si, Cu -
Si, Cu - Cr, Cu - Pb, Cu - P, and Cu - Te.

20 13. The method of casting a modified copper alloy from a
molten copper alloy containing Zr and P according to claim 12,
wherein said copper alloy to be modified satisfies $60 <$
 $\text{Cu} - 3.5\text{Si} - 1.8\text{Al} - 0.5\text{X} + 0.5\text{Y} + \text{Mn} < 90$ where X is Sn, Sb,
25 As or Mg and Y is Pb, Bi, Se, Te or Cr.